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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,806	12/29/2003	Ajay K. Sinha	P17380	1851
28962	7590	05/12/2008		
BUCKLEY, MASCHOFF & TALWALKAR LLC			EXAMINER	
50 LOCUST AVENUE			ZHOU, YONG	
NEW CANAAN, CT 06840				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/747,806

**Applicant(s)**

SINHA ET AL.

**Examiner**

Yong Zhou

**Art Unit**

2619

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## 7 DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-11, 13-18, 20-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim, Hyung Won et al. (US 2004/0049613), referred to hereinafter as Kim.

**Regarding claims 1 and 21**, Kim teaches a method (process, Abstract, line 1) comprising:

providing a link memory to store linked pointers for controlling access to a packet memory (Fig. 4, #400-402, [0025], lines 2-3 and 8-9, wherein the Free Pointer memory is provided to store free pointer queues (or free pointer linked lists) for controlling packet memory); and

maintaining at least two free link lists in the link memory, each free link list indicating a respective linked set of free storage locations in the packet memory (p3, left col., lines 2-5, [0028], lines 4-7, wherein the Balanced Linked List can have more than two Free Pointer queues to store independent free pointer linked lists).

**Regarding claims 2 and 22,** Kim further teaches that each of the free link lists is permitted to point to any storage location in the packet memory, except that no link in any of the free link lists points to a free link in another free link list ([0026], lines 1-5, wherein the two free pointer queues are disjointed and the free pointers in all free pointer queues can cover entire memory).

**Regarding claims 3 and 23,** Kim further teaches that each of the free link lists includes a plurality of pointers, each pointer indicating a corresponding storage location in the packet memory and a corresponding storage location in the link memory (Fig. 4, #400-402, [0035], line 5 through p4, left col., line 8, wherein the free pointer in each of the free pointer queues points to the corresponding storage location in the packet memory; the pointer also indicates the storage location in the free pointer queues #401, #402).

**Regarding claims 4 and 24,** Kim further teaches:

in each clock cycle in which a memory allocation request is serviced, allocating storage locations from the packet memory that are pointed to by a one of the free link lists ([0028], lines 2-4, [0030], lines 2-3, wherein the retrieving the free pointer to store one new element of packet data can be performed every clock cycle) that is, at the time of said each clock cycle, at least as large as any other of the free link lists ([0026], lines 5-8, wherein all the free pointer queues are maintained balanced in length).

**Regarding claims 5 and 25,** Kim further teaches:

in each clock cycle in which storage locations in the packet memory are freed, assigning a freed linked set of pointers in the link memory to a one of the free link lists

(([0029], lines 1-6, [0030], lines 1-3, wherein the returning the free pointer to the free pointer queue when an element of packet data is freed can be performed every clock cycle) that is, at the time of said each clock cycle, at least as small as any other of the free link lists ([0026], lines 5-8, wherein all the free pointer queues are maintained balanced in length).

**Regarding claims 6 and 26**, Kim further teaches that more than two free link lists are maintained in the link memory (p3, left col., lines 2-5, [0028], lines 4-7, wherein the Balanced Linked List can have more than two Free Pointer queues to store independent free pointer linked lists).

**Regarding claim 7**, Kim teaches an apparatus comprising:

a link memory to store linked pointers for controlling access to a packet memory (Fig. 4, #400-402, [0025], lines 2-3 and 8-9, wherein the Free Pointer memory is provided to store free pointer queues (or free pointer linked lists) for controlling packet memory); and

a memory controller (Fig. 2b, #230, [0009], lines 7-8) coupled to the link memory and operative to:

maintain at least two free link lists in the link memory, each free link list indicating a respective linked set of free storage locations in the packet memory (p3, left col., lines 2-5, [0028], lines 4-7, wherein the Balanced Linked List can have more than two Free Pointer queues to store independent free pointer linked lists).

**Regarding claims 8-11 and 13,** Kim teaches the limitations of claim 7. They contain the same limitations as claims 2-6, respectively. Therefore, they are rejected for the same reasons.

**Regarding claim 14,** Kim teaches a system comprising:

a packet memory (Fig. 4, #440-449) to store packet data;

a link memory to store linked pointers for controlling access to the packet memory (Fig. 4, #400-402, [0025], lines 2-3 and 8-9, wherein the Free Pointer memory is provided to store free pointer queues (or free pointer linked lists) for controlling packet memory); and

a memory controller (Fig. 2b, #230, [0009], lines 7-8) coupled to the link memory and operative to:

maintain at least two free link lists in the link memory, each free link list indicating a respective linked set of free storage locations in the packet memory (p3, left col., lines 2-5, [0028], lines 4-7, wherein the Balanced Linked List can have more than two Free Pointer queues to store independent free pointer linked lists).

**Regarding claims 15-18 and 20,** Kim teaches the limitations of claim 14. They contain the same limitations as claims 2-6, respectively. Therefore, they are rejected for the same reasons.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Najam, Zahid et al. (US 2002/194291), referred to hereinafter as Najam.

**Regarding claims 12 and 19**, Kim teaches the limitations of claims 1 and 7, respectively.

Kim does not specifically teaches that the link memory is a dual port memory.

Najam teaches that the dual port memory is used to place pointers ([0118], lines 2-3.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine teachings from Najam into the Kim invention to include the dual port memory for the link memory.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Zhou whose telephone number is (571)270-3451. The examiner can normally be reached on Monday - Friday 8:00am - 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chirag G. Shah can be reached on (571) 272-3144. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yong Zhou

May 5, 2008

/Chirag G Shah/  
Supervisory Patent Examiner, Art Unit 2619